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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/748,188	12/27/2000	Tadayoshi Iijima	P107424-00019	2973

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EXAMINER	
BERNATZ, KEVIN M	
ART UNIT	PAPER NUMBER
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APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
09748188	12/27/2000	IIJIMA, TADAYOSHI	P107424-00019

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EXAMINER	
Kevin M. Bernatz	
ART UNIT	**PAPER**
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Commissioner for Patents

Please note attached IDS filed November 29, 2006.

Kevin M. Bernatz, PhD
Primary Examiner

KMB
June 29, 2007

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/748,188
Filing Date: December 27, 2000
Appellant(s): IIJIMA, TADAYOSHI

Lee Cheng
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed September 27, 2006 appealing from the Office action mailed November 28, 2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,411,792 YUKINOBU ET AL. 5-1995

JP 06-087631 A (3-1994)

Derwent Abstract and Full English Language Translation of JP 06-087631 A (3-1994)

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 2, 3 and 8 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Yukinobu et al. (U.S. Patent No. 5,411,792) in view of Sumitomo Cement KK (JP 06-087631-A). See provided Derwent Abstract Translation and Full English Translation of JP '631 A.

Regarding claim 8, Yukinobu et al. disclose a transparent conductive film (*Title*) comprising a conductive film (i.e. Appellants' "compressed layer") on a support (*col. 2, lines 21 – 53 and examples*), said compressed layer having conductive fine particles (*col. 2, lines 26 – 28*) and a resin (*col. 3, lines 54 – 59*), wherein said compressed layer further comprises an impregnated transparent substance (*col. 3, lines 54 – 59; col. 4, lines 18 – 35; and examples*).

Regarding the limitation(s) "said compressed layer formed by compressing the conductive particles and the resin on the support with a compression force of at least

$44N/mm^2$", the Examiner notes that this limitation is a process limitation and is not further limiting in terms of the structure resulting from the claimed process. Specifically, in a product claim, as long as the prior art product meets the claimed structural limitations, the method by which the product is formed is not germane to the determination of patentability of the product unless an unobvious difference can be shown to result from the claimed process limitations. In the instant case, the "compressed film" will exhibit a *structure* resulting from compression being applied to the film. The exact pressure utilized is not deemed to produce an unobvious difference in structure and since Yukinobu et al. disclose using compressed layers, the structure resulting form the claimed process limitation is deemed to necessarily be met by the Yukinobu et al. invention.

Yukinobu et al. fail to disclose the amount of resin relative to the volume of the conductive fine particles in the compressed layer, though Yukinobu et al. does recognize that the amount of resin is a results effective variable used to control the overall conductivity of the film versus the haze and transparency of the film (*col. 1, lines 29 – 59*).

However, Sumitomo Cement KK (JP '631 A) teaches that when forming double layer transparent conductive films (*Paragraph 0001 of English Language Translation*), one should use a conductive layer comprising 62.5 to 100 wt% of conductive particles (*Derwent Abstract and Paragraphs 0007 – 0009*) inorder to insure a good combination of conductivity and mechanical properties (*Paragraphs 0007 – 0013 and 0027*). Since Yukinobu et al. teach compressed layer comprising resin and conductive particles, it

follows that the combined teachings would result in 0 – 37.5 wt% resin, thereby overlapping Appellants' claimed range of 0.03 – 9.3 volume percent. While the Examiner acknowledges the difference between weight percent and volume percent, the Examiner deems that there is reasonable basis to believe that 0 wt% is equal to 0 vol% and that 37.5 wt% is equal to or greater than 0.03 vol%, hence resulting in at least some significant overlap between the claimed ranges. Finally, based on Examiner Uhlir's "back-of-the-envelope" estimate on page 13 of the Examiner's Answer mailed November 2, 2004, the Examiner notes that 37.5 wt% resin would be ~80 vol% based on a difference in densities of 7:1 (assuming a 100 g basis).

It would therefore have been obvious to one of ordinary skill in the art at the time of the Appellants' invention to modify the device of Yukinobu et al. to use an amount of resin meeting Appellants' claimed volume percent limitations as taught by Sumitomo Cement KK inorder to inorder to insure a good combination of conductivity and mechanical properties, as desired in the Yukinobu et al. invention.

Regarding claim 2, the limitation "is formed by applying a dispersion liquid, which contains the conductive particles and the resin, onto the support and drying the liquid, said resin being contained at an amount of 0.03 – 9.3 parts by volume with respect to 100 parts by volume of said conductive particles in said dispersion liquid as represented by volume before dispersion" is a process limitations in a product claim and is not deemed to result in an unobvious *structure* when compared to the process used to make the Yukinobu et al. *structure*. Appellants are invited to provide evidence that the claimed process results in an unobvious difference when compared to the Yukinobu et

al. process of making the transparent conductive films. Specifically, the Examiner notes that the final product must still contain approximately 0.03 – 9.3 parts by volume of resin, per the limitations of claim 8.

Regarding claim 3, Yukinobu et al. disclose supports made of plastics (i.e. "resin") (*col. 3, lines 54 – 59 and examples*).

(10) Response to Argument

Regarding the rejection predicated on Yukinobu et al., Appellants argue that "[t]his resin amount of 0 to 37.5 wt% I Sumitomo Cement KK corresponds, as represented by volume, a much broader range of 0 – 296 parts by volume with respect to 100 parts by volume of the conductive particles" (*page 5 of Appeal Brief*). Without acknowledging the validity of Appellants' estimate of an upper range of "296", the Examiner essentially agrees with the statement that JP '631 A would appear to disclose a broader range in parts by volume that fully encompasses the narrower range claimed by Appellants. As noted by both Appellants and the Examiner (*ibid*), the logical path towards patentability in such a case is a showing of unexpected results.

It is Appellants contention that "[b]ased on the experimental data in the Examples and Comparative Examples of the specification, Applicant have clearly shown on the record that the claimed range of "*0.03-9.3 parts by volume*" achieve superior results not expected based on the teachings of Sumitomo Cement KK" (*pages 5-6 of Appeal Brief – emphasis in original*). Appellants further argue that the 296 parts by volume of resin is reflected by Comparative Examples 9 – 12, which exhibit high electric resistance, while

the claimed range of 0.03 – 9.3 parts by volume of resin exhibits low electric resistance values, thus illustrating "unexpected and superior properties of the claimed range" (*page 6 of Appeal Brief*). The Examiner respectfully disagrees for the following reasons.

The Examiner notes that Appellants are describing a behavior that is *expected* given the art recognized trade-offs between conductivity and haze. See Yukinobu et al., column 1, lines 39 – 59 (below, where the Examiner notes that "enhancement of surface resistance" means that the electric resistance increases).

thereby forming a conductive coating film. If the resin selected as the binder is used in too large an amount, the resin is interposed among the filler particles and hinders mutual contact of the particles, thereby resulting in enhancement of the surface resistance. If the resin is used in too small an amount, on the other hand, the filler particles are brought into close contact with one another and the surface resistance is low, but gaps remain among the filler particles and constitute a cause for light scattering, thereby lowering transmittance or degrading optical performance of the coating, enhancing a haze value and lowering strength of the film as well as adhesive force of the film to a substrate. Therefore, the resin as the binder should be used in an optimum amount. However, when an attempt is made to lower the surface resistance, for example, the haze value of the coating will be enhanced to such a degree as to degrade the optical performance of the film, whereby the conventional printing method was incapable of satisfying the two requirements of the low surface resistance and favorable optical performance.

Similar teachings are in JP '631 A in Paragraph 0012:

[0012]

In such an electrically conductive coating material, the proportion of transparent conductive filler in solids is set at 62.5-100% by weight since when it is less than 62.5% by weight, the electric conductivity of the resulting film (layer) is reduced and a desired high electric conductivity can not be obtained although the transparency becomes high. Furthermore, the more the content of transparent conductive filler the more advantageous for the electrical conductivity, and it is preferred to make the transparent conductive filler content 100% by weight of solids without adding binder. However, if the filler content increases the transparency of the resulting film (layer) is reduced, and thus the content of the filler is suitably decided according to the characteristics required in the finally obtained film (double-layer transparent electrically conductive film).

If anything, JP '631 A (*above*) desires extremely low amounts of resin (i.e. 100% filler content), since the *expected* result is "advantageous for the electrical conductivity" (*where the Examiner notes that a high electrical conductivity means a low electric resistivity*). As such, while the Examiner acknowledges that Appellants' data illustrates that low resin amount leads to a low electric resistivity (i.e. high electric conductivity), the Examiner does not deem that such a showing supports patentability given that the prior art of record clearly demonstrate that such a value in electric resistivity/conductivity would have been *expected* to one of ordinary skill in the art. Finally, the Examiner notes that the aforementioned films are a mixture of highly conductive particles and insulating resin. Even in the absent of the explicit teaching in the above noted references, the Examiner notes that one of ordinary skill in the art would reasonably expect that the more of the highly conductive particles added to the film, the higher the conductivity of the film (*i.e. lower the electric resistivity*).

Appellants further argue against heat treatment means (*page 6 of Appeal Brief*), but the Examiner notes that said limitations (or exclusion thereof) are not claimed, and hence Appellants' arguments are moot for the issues being determined by the Board of Patent Appeals and Interferences.

Regarding the concern of the range 0.03 – 9.3 parts by volume, upon further consideration and consultation, the Examiner notes that no rejection under New Matter is required at this time.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Kevin M. Bernatz, PhD
Primary Examiner

Kevin M. Bernatz, PhD.

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Carol Chaney

/Jennifer Michener/

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